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Notebook Miniature Computers- Cambridge Z-88 vs. Atari Portfolio- A review in the Seattle Timex-Sinclair Users' N/L raises some questions of philosophy that made the Cambridge Z-88 and Atari Portfolio two quite different answers to the same question - how to make a notebook-sized computer light enough to take everywhere yet still usefully compatible with the world of big computers, MS DOS and Apple Macs not to mention mainframes, at a reasonable cost. The Atari Portfolio aimed for full MS DOS compatibility using an 80C88 and 128K RAM, 128K RAM disk (a typical upgrade) and a clone of MS DOS version 2.11. That approach won praise in the computer press while Sir Clive Sinclair's approach with the Z-88, Z-80 and more reliance on types of ROM and going for data compatibility/convertibility with MS DOS, Apple Mac and mainframes only, the data being entered and processed by handcrafted and memory frugal Z-80 programs and resident BASIC, well that approach won little praise. Unfortunately the Portfolio sort of missed the MS DOS compatibility target, with few of todays programs capable of running in 128K, as I found out with an old 156K portable, even ARC/ZIP programs baulking, the Z80MU CP/M emulator, C compiler, modem programs and wordprocessors with spell checkers, too. This means the Atari Portfolio will run old, memory frugal MS DOS software if you can find it anymore, mostly. So it is compatible only to the MS DOS standards of half-a-dozen years ago, and IBM compatibility is a target that is still moving, as the notebooks and laptops try to track it, as to RAM 512K, 1 megb, 2?.., as to MIPS,5MHz 8088, 80286 at 10 MHz, 80386 at ?, disks 360K, 720K, 40 Meg, 64 Meg... every step the laptops try to reply "Yes I can" to the desktops'song of, "Anything you can do, I can do..." And all this expensive MS DOS emulation of the little computers seems based on the consumers' desire to learn as little new as possible, that is the minimum of MS DOS and an MS DOS application or two and that is it. (Or BASIC phobia as Michael Stone who wrote the Seattle Users Gp. article observes.) Conclusions: the Atari didn't solve this problem and the Z-88 fail; perhaps MS DOS compatibility is not worth doing in a small computer; there is a market for memory frugal MS DOS programs for the small computer RAM machines that amateurs could write; the appearance of MS DOS compatibility may not be the reality of MS DOS compatibility.

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Rumours Of A Japanese Master Plan Right now as you read this, perhaps in the top executive meetings, the Japanese are planning to launch the masterstroke that will take the software lead and the hardware lead of IBM compatibility from America and Microsoft, or so they hope. They have looked over the dismal performance of MSX, the last attempt at dominating the world market with an easily produced computer based on putting the Z-80 microprocessor and some other chips and 16K of RAM into a standard that eventually was planned to be mass marketed as a one-chip computer, and bring in the profit in wheelbarrow loads. This time, they will not trust an American ally as powerful and self-serving as Microsoft has become now and they can not afford to make splashy waves by flooding the market. They will have to enter the market slowly, systematically, so no one will realize that they have taken it over before they are there. Possibly they will virtually give away the new computer and certainly the operating system (possibly the latter as crippleware), and only start to charge a reasonably high price when they have the end of market dominance or at least have assured a very big chunk of the market will be theirs. They have probably concluded from the MSX fiasco, that not only must software sales be based on hardware standard of a proliferating platform, with no licensing of manufacture outside 'the club' if possible, but that it must be state of the art hardware, like ....RISC?, SPARC-like standards?, microsupercomputer of a type barely seen in the microcopmuter market and then only in high-end workstations? It will offer a hardware advantage though use reliable, proven technology. The software will be its greatest moneymaker, and hardware accessories for a while, and model upgrades. The software will be all produced by CASE systems that only big companies can afford.

The Old MS DOS Compatibility Issue Comes Back

Attempts to make 8-bit or even 32/16-bit (68000) computers MS DOS compatible fell flat due to lack of speed. Either too little hardware seemed to make the emulators run too slowly, as software had to do all these extra tasks, or the problem and expense of aftermarket hardware modification/attachment surfaced. CP/M compatibility seemed achieved at much less cost, largely due to the low cost of Z-80 and 64K RAM expansions (on the Apple II, Commodore 64, and 128, etc.) and the fact that CP/M required a fairly straightforward monochrome, character-based, dumb-terminal like graphics. Try to emulate one or more of the fancier MS DOS/IBM-compatible graphic standards and the software is in for a technically demanding job, beyond its ability to accomplish with any speed. And then the IBM-compatible hardware keeps getting faster, faster clock speeds and wider bit-handling, both, 8 to 16 to 32 in the true 80386 computers. The overlays start getting thicker as Windows is laid on top of MS DOS which is laid on top of the BIOS calls in ROM. Now everyone wants to add another layer of systems routines, those for multitaskin, multi-user and networking. Then there are the GUI's which gobble mips and memory, just as their µprocessors exceed the speediness of the older processors, the slower ones, to handle the older operating system standards. So in MS DOS, its very success has led the emulators and compatibility seekers to have to attempt to track a moving target, in a way that CP/M, frozen into a less progressive standard by the lack of money (due to the lack of sales) to justify upgrading. (Can you imagine a ?-windows version of CP/M with a GUI? I wonder if anyone ever tried that! In 1980, there was a multi-tasking version of CP/M though.) Anyway, CP/M emulation among the orphan computers was at least a viable alternative that some still use today. MS DOS emulation never seemed to get off the ground, but with small board 8088/PC controllers, perhaps its time may be nearing if hardware is used to do most of the emulation On anything less than a supercomputer software emulation only doing the job runs necessarily too slowly.

IBM introduces a new standard, conceptually similar to MS DOS, the OS/2 operating system, but it goes nowhere in the market place. The SUN-SPARC-Berkeley-University-derived standard, keeps Sun workstation computers and UNIX operating system of AT & T in the running as a challenger to MS DOS. Apple Macintosh and Microsoft's Windows fight over the graphic-command-language/mouse driven market but the Macintosh standards are aging and have only a modest user base to hold them in the market and Windows is a patch to an old operating system, MS DOS. RISC microprocessors seem to offer enough of a lead on the MS DOS/IBM PC/AT standard to allow some degree of software emulation so that non-Intel microprocessors can be used in foreign and alien (DEC, American and oriental clone artists') manufactured computers. Does this offer an opportunity to break up the MS DOS/IBM PC/AT proprietary skim off the computer market? That and a new hardware standardization that has the participation, no less, of Microsoft itself, seems to be behind the announcement of a group to produce ACE (Advanced Computing Environment), a standard that will blow apart IBM's proprietary rights to the IBM-compatibile software and hardware standards, and create an open system to open up the market to free, commodity like computers from foreign manufacturers, if the plans of the group are realized. Will it succeed? That is the big question that only the future can answer. But it may be the near future, with hardware being made available to developers by the end of 1991 and to the public, in the form of workstation quality computers (better than 80386 is the current standard for this level). As the Europeans fencing in their local market while the orientals anxious to market something new, to lead rather than follow, does it matter if the new computers are being launched into a recessionary time of contraction (or will it be into the tail of a recession?). Certainly it will pose some hard decision making tasks on software companies facing hard times, as whether to seriously commit to working on the new system or just dabble, to keep their hand in in case it takes off. Investment money for massive new retooling in software as in hardware is hard to find these days of shrinking even of deep pockets. Launching into a market afraid to take risks on new products or buy anything new, and without the money to support premium prices, is a recipe for fiasco, or at least for long odds on a big gamble.

The other questions remain. Will copying the Macintosh/Xerox PARC style of interface, and even less command line, MS DOS prove anything but an expensive reinvention of the wheel, when computers were just about to enter the world of tv quality animated graphics and sound? "Shove the bar graphs! Give us cartoons!" may be the whispered call, in the boardrooms as well as in the classrooms.

Snapshot of Computer Technology Shifts (Part 1) Feb.1991

Big Computers: The mainframe is not dead and is merging with the near supercomputer market. Minicomputers are stepping up to become the mainframes of the future and their software/hardware compatibility stepping down to be implemented in workstation/desktop micro models. At the same time software is being mass produced from C code intended originally to be run on micros or workstations, often the code and the routines mixed and matched from various sources including public domain. The big news is that big computers survive, the bad, that 'barely' is the survival mode, with profit margins dropping.
Microcomputer Classes: The traditional desktop with 8088-80286, or 68000 family microprocessors with a hard disk and a floppy, continues as the office and shop workhorse, altho increasingly tied into networks as a terminal and the workstation/super micro computer are seeing new use for office file servers and the traditional use as engineering workstations, the workstation market seeing the start of a turf war between 68000 family systems and Sparc compatibility while office file servers are still dominated by 80386-80486. The three classes of microcomputers popular to date, remain office desktops, supermicros (workstations and file servers), and home desktops, where the news is that IBM-compatibles are crowding Commodore 64's, Amigas, Atari ST's, Apples and all others out of the buyers' hearts for this class of home use. The riddle for those catering to the home market is whether multi-media computers will be added as a branch in this market or the game need be fulfilled by Nintendo and its competitors, with Nintendo issuing adult games this year making it clear that they intend to go for it....The fourth class of computers is the big news: small computers, laptop, notebook and apartment-sized hobby computers is the fastest growing and most confusing to evaluate in terms of future trends and ultimate types that will be successful and those that will gather dust in drawers and closets. Incorporating all the features of a big computer including IBM PC or AT compatibility and full MS DOS compatibility seems fundamentally in conflict with small size, light weight and low power consumption for battery operation. When the tradeoffs are made to do as well as possible to optimize this tradeoff, you end with a computer that is expensive to make, prone to breakdown, and due to component crowding and use of non-standard non-modularized, high-tech boards, expensive to repair. One can question if one needs full-IBM compatibility with the high MIPS and memory requirements of bloated MS DOS software just to edit an ASCII text or spreadsheet? Wouldn't MS DOS data compatibility, not full MS DOS software compatibility be enough? The answer seems to be for the average user, no, since the motivation in asking for IBM and MS DOS compatibility is in order tobe able to do the same job, the same way, with the same software as in the office and so not to have to learn any new software,(operating system or application). Few reasonably priced computers come anywhere near fulfilling these criteria, laptops included even (for memory limitations; disk or eprom, mainly). This has resulted in a new potential market for programs that fit in small memory spaces. Until big names like Wordperfect, dBASE III Plus and Lotus 1 2 3 (not to mention MS DOS itself which has become bloated from the time EDLIN fit in 2½K compared to 15K now, also UNIX, etc.), produce memory compact versions, users will be forced to search among old shareware perhaps converted from 64K CP/M versions, in the early days of MS DOS, to get the small programs often needed, which are hardly the same as current MS DOS applications , and must be learned from scratch (or relearned). Aside: anyone think of making a notebook sized CP/M computer? The memory saved on active RAM, the difference between 64K and 640K, would make some nice RAM disk space, if it had a sleep mode, to save batteries.
New Electronics: The biggest need is a drop in price in memories, especially those suitable for the new laptop/notebook sized computers talked of above. Biggest recent news, the challenge of Sparc-compatible chip sets vs.68000/MSDOS hardware, and the offering of Sparc clones. Gallium Arsenide chips, ECL, fiber optic buses and internal wiring in computer processors seem ripe along with a RISC microprocessor/CPU/microcontroller flood of products, RISC microcontrollers offering fast interpretation of any previously developed customer software (machine code for any other microcontroller) or high level languages like floating point BASIC, operating system command languages, anything imaginable.

(Part 2 will consider multi-media software; next.)

What The 20th Century's Deepest Thinker Might Say About Artificial Intelligence

Unfortunately for us, the greatest thinker about the deep issues of philosophy and analyst of the ultimate basis of meaning, died in 1949 before the computer revolution really got underway. A professor at Cambridge, an eccentric and a genius, Ludwig Wittgenstein, did however leave some writings on language and the problem which came to be called,'the ghost in the machine' misconception (by a contemporary, G.Ryle). His first ideas about meaning were called the picture theory, which he got, while waiting in the trenches of the first world war, for action, on seeing an illustrated story of a motor vehicle accident and how it would happen, in drawing form, in a popular magazine. This immediately shows how trendy this line of thinking would be with more and more thinking seen as perception-like. Certainly the appearance of a car accident in pictures drawn by a cartoonist or a computer can certainly portray the essence of it. Wittgenstein went on in the decades following to conclude that it may portray the meaning of little else.

However, Wittgenstein moved beyond this theory to the point where his philosophy is divided by analysts into two periods , called often I & II, and it was in the period II that he rejected the picture theory of his period I and went for what has been called a 'game theory'. It is called a game theory, not because the intelligence involved in the use of language and the nature of meaning is a game, but because it is a bunch of activities so specific and different from each other, that these activities from which meaning springs, have no more in common than one game often has in common with another. In other words to define and analyse meaning, one has to look at the individual context and activity that the meaning springs from rather than making fine generalizations and rules. Just as you can't generalize on the rules of games — pontificating that games must have an official set of rules (American professional football may but 'tag' doesn't), that games are competitive (ring-around-a-rosey isn't), that they must have teams, or at least two players (solitaire doesn't) — you can't generalize on language and meaning in order to find the meaning of meaning. If you want to look up his books you will find them quite easy to read, but food for a lot of thought, of the 'what is the sound of one hand clapping' type. Ideas are in short sections of a few paragraphs, or even one, that you can take away and chew on. ("Philosophical Investigations" is his masterpiece, although several other of his books exist, though note that his "Tractatus Logico-Philosophicus" belongs to his earlier, period I, of the picture theory of meaning and is not an easy book to read at all, unlike his later work. Unfortunately most books on Wittgenstein rather than by him are harder to understand than his own books. Also note the books of G.Ryle, like "The Concept of Mind", which is easier to read and covers much of the 'ghost in in-the-machine" arguments). So Wittgenstein himself ended in seeing pictures as the transmission medium underlying meaning only in one or two games in life, such as those of video games and cartoons explaining how car crashes could occur.

If neither Wittgenstein or Prof. Ryle could find enough evidence in the behaviour of human beings as externally observed, for 'a ghost in the machine', the conclusion that human beings, and probably animals too, have a mental, psychic life (in the broad sense), must come from elsewhere than the behaviour itself. In other words, we could only expect to conclude that computers or other robots had a similar existence to ourselves, that is a mental one, if one were to spend enough time and share enough confidences with them as to be convinced, much the way we thought we learned that other children thought thoughts inside in the same way we did, as a child. Maybe that is why we don't accept animals as being truly in the same class as us; they never have really been able to sit down and share their innermost thoughts with us, at least in a scientifically convincing way.

The computer's innermost thoughts are not really as rich as ours, and so are simply a small part of our innermost thoughts, some sort of logical, clerical, routine part, as like to our thoughts as a two dimensional drawing is to the real world, with even a fourth time dimension, color and relocatable, real-time decision making human in the centre of it. The computer's intelligence is that of a sort of intellectual flatlander. According to deep sceptics like Wittgenstein and Ryle who doubt that you can conclude that there is a mind in the machine, in some ghostly sense, from the evidence of watching its behaviour, since you can't even do it in the case of a human, one can only conclude that the human mind (or machine mind) is something so fundamental and its existence or not in human or machine, a fruitless subject for analysis at this time and level of progress in thinking the problem through. The same for intelligence if analysed via possession of any of these 'human' or 'ghost-in-the-machine'-like qualities.

If the thinker on deep issues wants to make progress, it will instead be found by pursuing simpler ideas, such as how to help computers and computerized robots avoid disasterous mistakes (disasterous to us), and such subsidiary issues as how to measure intelligence and how to improve it in this or that field of computer reasoning applied to a specific class of problems. Luckily bahaviouristic analysis is a powerful tool here, as is mathematics, theories of graphic projection and transformation, parsing of pictures and fiddling with language both icon and English-like. In the latter context, the transition from signal and sign to symbol, on a practical basis, as written on by Prof. Langer, rather than trying to guess when human intelligence is needed to make a sign a symbol and when it isn't is one way to go and the uses of signs in games in Wittgenstein's "Philosophical Investigations" can offer more than a few pointers of how to do such analysis.